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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/510,604	10/08/2004	Spencer Edwin Taylor	608-442	4020

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NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD, 11TH FLOOR
ARLINGTON, VA 22203

EXAMINER	
SINGH, PREM C	

ART UNIT	PAPER NUMBER
1764	

DATE MAILED: 10/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/510,604	TAYLOR, SPENCER EDWIN	
	Examiner	Art Unit	
	Prem C. Singh	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 October 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *47-76* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *58 and 59* is/are allowed.

6)☒ Claim(s) *47-57 and 60-76* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 October 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *01/13/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The current title "Method and apparatus for improving the oxidative thermal stability of distillate fuel" is not appropriate because the claimed invention is drawn to method for improving the oxidative thermal stability of distillate fuel.

The following title is suggested: "A method for improving the oxidative thermal stability of distillate fuel".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 47-57, and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fenske et al (US Patent 2,139,943).

Claim 47.

Fenske invention discloses a process of extraction from crude petroleum or products thereof of materials considered deleterious, by the simultaneous use of a selective solvent and an adsorbent material. The invention discloses, "The substances to be removed depend generally upon the source of the crude and/or the character of the prior treatment thereof. These materials include nitrogen compounds." (Page 1, column 1, lines 9-16).

It is to be noted that Fenske does not specifically mention about jet fuel, N-H containing heterocyclic aromatic compound, and active concentration of metal compounds in the fuel or exposure of the fuel to active metals during use or storage.

Fenske invention does mention about petroleum fraction which includes jet fuel. The invention also discloses removal of nitrogen compounds, which includes N-H compounds. Thus, it would have been obvious to one skilled in the art at the time the

invention was made to modify Fenske invention and use a jet fuel for the removal of N-H compound in a process to produce a jet fuel with improved properties.

It is also known to those skilled in the art that distillate fuel after removal of nitrogen compounds will be stored in storage vessels before use and will be passed through tubes/pipes during the use. The storage vessels and tubes/pipes are mostly metallic.

Claim 48.

Although Fenske invention does not specifically mention about a jet fuel containing an active concentration of metal compounds, the invention does disclose using a petroleum distillate. Fenske further adds, "These materials include asphaltic substances, resins, nitrogen compounds, sulfur compounds, unsaturates, naphthenic acids, color bodies, etc." (Page 1, column 1, lines 12-16). Since the distillates comprise of jet fuel, it is expected that jet fuel will inherently have all the impurities, including metal compounds.

Claims 49, 55.

Fenske invention discloses, "The other method involves filtration through a suitable adsorbent material such as fuller's earth, silica gel, bauxite, activated charcoal, Florida earth etc." (Page 1, column 1, lines 21-24).

Claim 50.

Fenske invention discloses, "Other solvents which are selective as to type of molecule are benzaldehyde, propionaldehyde, tolualdehyde, etc." (Page 3, column 2, lines 65-75; page 4, column 1, lines 1-2). Fenske also discloses, "Sharper separation between desired and undesired constituents may be obtained by extracting the oil with a suitable solvent in the presence of an adsorbent material, or, in other words, by extracting in presence of a filter medium." Fenske further adds, "Many solvents which are selective as to type of molecule and therefore, suitable for maintaining the adsorbent medium substantially revivified." (Page 3, column 2, lines 57-60). Thus, since the separation is better when benzaldehyde and the adsorbent act together, it would have been obvious to one skilled in the art at the time the invention was made to modify Fenske invention and use benzaldehyde functionality supported on the adsorbent support as mentioned under claim 49, for effective removal of nitrogen compounds from distillates.

Claims 51-54.

Fenske invention does not specifically mention about different compounds, but does mention using benzaldehyde as discussed under claim 50, thus, it would have been obvious to one skilled in the art at the time the invention was made to modify Fenske invention and use claimed compounds with benzaldehyde functionality, because all the compounds are functionally similar and expected to give effective removal of nitrogen compounds from distillates.

Claims 56, 57.

Fenske invention does not specifically mention about kaolinite clay, but since this clay is chemically a mixture of silicates and aluminum oxide/hydroxides, it should functionally work similar to the adsorbents discussed under claims 49 and 55. Thus it would have been obvious to one skilled in the art at the time the invention was made to modify Fenske invention and use kaolinite clay because it is expected to be equally effective for nitrogen removal from distillates.

Claim 60.

All the limitations of claim 60 are disclosed and discussed under claims 50-54.

Claims 61-70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fenske et al (US Patent 2,139,943) in view of Jewell et al (US Patent 3,446,729).

Claims 61-70.

Fenske invention does not specifically mention about nitrogen compounds.

Jewell discloses a process for removing sulfur, oxygen, and nitrogen compounds from petroleum distillates. Jewell invention discloses, "Among the nitrogen compounds generally resistive to standard refinery procedures are carbazoles." (Column 3, lines 24-26). Jewell also discloses indole as another heterocyclic nitrogen compound (Column 6, line 61).

Since Fenske and Jewell inventions are disclosing processes for removing nitrogen, sulfur, and oxygen compounds from petroleum distillates using adsorbents, it would have been obvious to one skilled in the art at the time the invention was made to modify Fenske invention and remove carbazoles and indoles from petroleum distillates as disclosed by Jewell invention. Also, since carbazoles and indoles are heterocyclic aromatic nitrogen compounds, any derivatives of carbazoles and indoles will act in similar fashion and can be removed from distillates by Fenske process.

Claims 71-76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fenske et al (US Patent 2,139,943) in view of Johnson et al (US Patent 4,409,092).

Claims 71-76.

Fenske invention does not specifically mention about metals in the jet fuel.

Johnson discloses a process for producing jet fuels from hydrocarbon materials derived from oil shale, coal and crude oil. The invention discloses, "Oil feed materials from crude oils coal and shale oil boiling up to 1000°F or 1050°F and containing a considerable amount of sediment fines, metal contaminant materials such as iron, copper, nickel, vanadium, sulfides thereof and other materials which would tend to plug a catalyst bed, and arsenic which is a poison for hydrotreating and reforming catalysts and other catalysts used in the process. These metal contaminants are first at least partially removed from the oil feedstock by passing through a bed of adsorbent material." (Column 4, lines 57-67). "Any solid sorbent material may be used for this

purpose including spent cracking catalyst, clays, and other inert materials suitable for the purpose." (Column 7, lines 23-26).

Since Fenske and Johnson inventions disclose production of jet fuel using similar feeds, processing with an adsorbent, and operating conditions, it would have been obvious to one skilled in the art at the time the invention was made to modify Fenske invention and removed the metals from the jet fuel processing as disclosed by Johnson.

Allowable Subject Matter

Claims 58 and 59 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Poirier et al, US Patent 4,529,504.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prem C. Singh whose telephone number is 571-272-6381. The examiner can normally be reached on MF 6:30 AM-3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PS/101706